

Customer No. 24498
Attorney Docket No. PU030257
Office Action Date: September 29, 2010

PATENT

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REMARKS

Claims 1-50 are pending.

Claims 1-40 stand rejected.

Claims 41-50 are allowed. However, Claims 49 and 50 have been amended to correct an obvious error. In particular, the claims are amended to depend from Claim 48 to provide antecedent basis for "predetermined criteria." No new matter is believed to be added by the present amendment.

Reconsideration of this application is requested in view of the following remarks.

Claim Rejections – 35 U.S.C. §101

Claims 1-40 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Of Claims 1-40, Claims 1, 12, 19, 27, 28, 33, and 37 are independent claims, and are each directed to a process/method.

Claim 1 recites:

In a video encoder, a method of inter coding a pixel region of a current picture in a video sequence of pictures, the sequence including a plurality of references listed in at least one reference list, the method comprising: the step of selecting the first reference listed in a reference list to be used as the only reference to be used to encode the pixel region of the current picture.
(Emphasis added.)

Thus, Claim 1 recites steps performed in a video encoder and, hence, is tied to the statutory class of apparatus.

Similarly, Claims 12, 19, 27, 28, 33, and 37 are also tied to the statutory class of apparatus.

For purposes of coordination and consistency of examination, Applicants kindly direct the Examiner to U.S. Application No. 10/569,236 (entitled "METHOD AND APPARATUS FOR ENCODING HYBRID INTRA-INTER CODED BLOCKS") U.S. Application No. 10/569,236 has claims generally directed to the encoding method and apparatus, and Claims 1

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and 29 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter in the Office Action dated September 10, 2010. A telephone conference between the Applicants' representative, Mr. Gaspare J. Randazzo, Reg. No. 41,528, and the Examiner, Mr. Emmanuel Bayard, conducted on October 20, 2010, resulted in an agreement to withdraw the aforementioned 35 U.S.C. §101 rejection. Copies of the Office Action dated September 10, 2010 and the telephone Interview Summary dated October 22, 2010 are attached hereto for the Examiner's convenience.

In the current Office Action, Claims 1, 12, 19, 27, 28, 33, and 37 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter, as in U.S. Application No. 10/569,236. However, the subject claims recite "In a video encode" as in the claims of the '236 application. As in U.S. Application No. 10/569,236, the Applicants respectfully submit that the subject claims are directed to statutory subject matter and request withdrawal of the 35 U.S.C. §101 rejection.

As Claims 2-11, 13-18, 20-26, 29-32, 34-36, and 38-40 directly or indirectly depend from Claims 1, 12, 19, 28, 33, and 37, respectively, Claims 2-11, 13-18, 20-26, 29-32, 34-36, and 38-40 are believed to satisfy the requirements of 35 U.S.C. §101 for at least the same reasons as Claims 1, 12, 19, 28, 33, and 37. Thus, reconsideration of the rejection is respectfully requested.

Claim Rejections – 35 U.S.C. §103

Claims 1-10 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kikuchi et al. (U.S. Patent Publication No. 2007/0211802 A1, hereinafter "Kikuchi") in view of Hagai et al. (U.S. Patent Publication 2004/0247031 A1, hereinafter "Hagai"). The rejections are respectfully traversed.

It is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest each and every limitation of claim 1, which recites:

In a video encoder, a method of inter coding a pixel region of a current picture in a video sequence of pictures, the sequence including a plurality of

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references listed in at least one reference list, the method comprising: the step of selecting the first reference listed in a reference list to be used as the only reference to be used to encode the pixel region of the current picture. (Emphasis added.)

Claim 1 is directed to a method wherein the first reference in a reference list is selected as the only reference to be used in motion estimation. In an exemplary embodiment, the value of the syntax element num_ref_idx_IN_active_minus1 is set to zero to indicate that only one reference picture is used for inter prediction, and no reference index needs to be transmitted. Therefore the overhead caused by the reference index is avoided and compression efficiency improvement may be achieved.

Kikuchi teaches a predictive coding method for motion vectors. In this method, predicted motion vectors are generated from motion vectors of previously encoded frames or macroblocks. The number of encoded bits of motion vectors may be reduced by encoding the difference vectors between the predicted vectors and the motion vectors to be encoded.

The Examiner states that Kikuchi teaches a method comprising “the step of selecting a reference frame (see paragraph [0079] listed in a reference list to be used as the only reference to be used to encode the pixel region of the current picture (see paragraph [0025] [0036] [0040] [0094].” The applicants respectfully disagree with the Examiner’s interpretation of Kikuchi.

Cited paragraph [0079] states: “[a]s is the cases of FIGS. 3 to 6, when the reference frame used for encoding is selected from candidates of many reference frames, the same frame-to-frame distance or the same scaling factor may be used for the candidates of all reference frames.” This describes that a reference frame is selected from candidates of many reference frames, but without mentioning or suggesting that only one reference frame is selected. Further referring to paragraph [0052] of Kikuchi: “[i]n the example of FIGS. 3 to 6, since two reference frames rf0 and rf2 are used for prediction, an index value expressing a combination of two reference indexes ref_idx_f and ref_idx_b corresponding to the reference frames rf0 and rf2 is encoded” (emphasis added), it is clear that **more than one reference frame** is used for motion estimation in Kikuchi. This also confirmed by FIGS. 3 to 6.

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Cited paragraphs [0025] [0036] [0040] [0094] of Kikuchi appear to be irrelevant to the limitations in Claim 1 after careful review. In particular: paragraph [0025] of Kikuchi is a brief description of FIG. 12, reciting "FIG. 12 is a diagram of explaining a positional relation of a macroblock of an object and macroblocks around the macroblock"; paragraph [0036] describes the diagram in FIG. 2; paragraph [0040] outlines one of the two types of motion vector prediction encoding methods, reciting "[I] A prediction coding method using a motion vector of an encoded frame as a reference vector"; and paragraph [0094] defines "MEcf: Quantity of movement from the frame rf to the frame current." None of paragraphs [0025] [0036] [0040] [0094] relates to the limitations of Claim 1.

Therefore, contrary to the Examiner's statement, Kikuchi does not disclose or teach "the step of selecting a reference frame listed in a reference list to be used as the only reference to be used to encode the pixel region of the current picture" (emphasis added). Because at least one reference frame is always selected from many reference frames for motion estimation in Kikuchi, it is contrary to select one reference, namely "the first reference frame from many reference frames" (Office Action dated September 29, 2010, page 8, lines 5-6) to be the only reference as suggested by the Examiner. Hence Kikuchi fails to disclose or suggest each and every limitation of pending Claim 1.

Moreover, even assuming for argument's sake that Kikuchi and Hagai can be combined in the manner suggested (which Applicants disagree), it is respectfully asserted that Hagai does not cure the deficiencies of Kikuchi admitted by the Examiner.

The Examiner has acknowledged on page 8 of the current Office Action that "Kikuchi does not teach that the reference frame is the first reference frame from many reference frames." To cure the admitted deficiency in the teachings of Kikuchi, the Examiner states that "Hagai teaches is the first reference frame from many reference frames to be used to encode the pixel region of the current picture (see paragraph [0058])" (emphasis in original). Applicants respectfully disagree with the Examiner's interpretation of Hagai.

Hagai provides a motion estimation method in spite of fade. It also provides methods to encode the motion vectors. In one embodiment, a differential vector is obtained to indicate a difference between the first motion vector and the second motion vector, the first motion vector and the differential vector are then encoded.

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Claim 1 recites, *inter alia*, "selecting the first reference listed in a reference list", and not simply selecting the first reference. However, the cited paragraph [0058] of Hagai discloses the following: "a first candidate generation step of generating, for the current block to be estimated, a first motion vector candidate based on a first reference picture; a second candidate generation step of generating, for the current block, a second motion vector candidate based on a second reference picture" (emphasis added). The first reference picture is related to the first motion vector. However, the first reference picture for the first motion vector does not necessarily imply at all the first picture in a reference list as explicitly recited in Claim 1.

Thus, Hagai fails to teach or suggest the aforementioned limitation of Kikuchi admitted to be missing.

Hence, neither Kikuchi nor Hagai, taken singly or in combination, teach or suggest each and every limitation of pending Claim 1. Accordingly, Claims 1 is patentably distinct over the cited references for at least the reasons set forth above.

Claims 2-10 directly or indirectly depend from Claim 1 and, thus, include all the limitations of Claim 1. Accordingly, Claims 2-10 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above with respect to Claim 1.

Claim 12 is similar to Claim 1 in that both claims involve "the step of selecting the first reference listed in the reference list to be used as the only reference to be used." Given that the same references were cited against both claims, we respectfully argue that Claim 12 is also patentably distinct and non-obvious over the cited references for at least the same reasons as set forth above regarding Claim 1.

Reconsideration of the rejection is respectfully requested.

Conclusion

Applicants believe they have addressed all outstanding grounds raised by the Examiner and respectfully submit that the present case is in condition for allowance, early notification of which is earnestly solicited.

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Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicants' undersigned attorney at his number listed below.

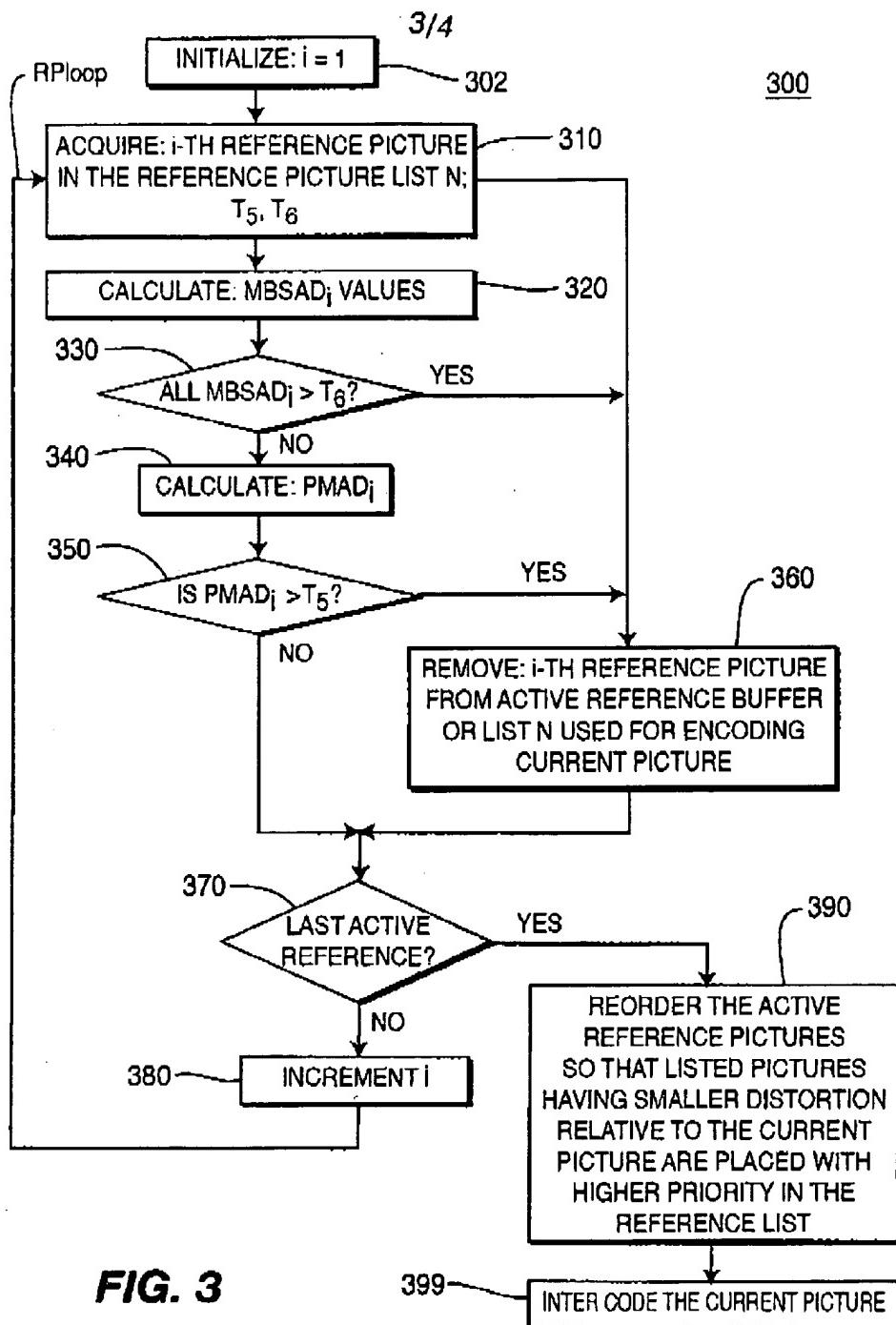
Respectfully submitted,

By:


Paul P. Kiel
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Patent Operations
P.O. Box 5312
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Date: 1/18/11

PU030257
 Application No. 10/569,168 - Filed 02/22/2006
 REPLACEMENT SHEET

**FIG. 3**

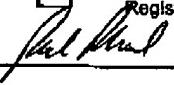
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PTO/SB/22 (07-09)

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) FY 2009 <i>(Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4810).)</i>		Docket Number (Optional) PU030267
Application Number 10/569,168		Filed 02/22/2006
For Method and apparatus for minimizing number of reference pictures used for inter-coding		
Art Unit 2611		Examiner BAYARD, Emmanuel
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.		
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):		
	<u>Fee</u>	<u>Small Entity Fee</u>
<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$130	\$65 <u>\$ 130.00</u>
<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$490	\$245 <u>\$ _____</u>
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1110	\$555 <u>\$ _____</u>
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$1730	\$865 <u>\$ _____</u>
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$2350	\$1175 <u>\$ _____</u>
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		
<input type="checkbox"/> A check in the amount of the fee is enclosed.		
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.		
<input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.		
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>07-0832</u> .		
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.		
I am the <input type="checkbox"/> applicant/inventor.		
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).		
<input checked="" type="checkbox"/> attorney or agent of record. Registration Number <u>40,677</u>		
<input type="checkbox"/> attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____		
		<u>1/18/11</u>
Signature		Date
Paul P. Kiel		609-734-6815
Typed or printed name		Telephone Number

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

 Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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